

# Some Thoughts on CrossFit

Patrick Ward - March 05, 2013

Crossfit is an incredibly popular training system at the moment for a variety of reasons one of which being that the workouts are extremely challenging and demanding. A study recently published in the Journal of Strength and Conditioning Research set out to evaluate the fitness adaptations that take place during a 10 week Crossfit training program ([Smith MM, et al. Crossfit-based high intensity power training improves maximal aerobic fitness and body composition. J Strength Cond Res 2013. Published ahead of print.](#)).

## Subjects

The study began with 54 healthy participants of varying fitness levels; however, only 43 completed the study (23 males/20 females) and were able to return for the post training re-test (*more on that later*).

## Methods

The subjects body composition and Vo2max were tested at the start and end of the study to evaluate for changes.

Following the initial testing the subjects performed a 10 week, periodized, CrossFit training program at a CrossFit affiliate gym. The program utilized basic gymnastic activities (handstands, ring work, etc) and multi-joint exercises such as the squat, press, deadlift, and Olympic lift variations. The training program had some variation to it, adding an element of periodization, where some exercises were performed as a time trial (best time) and others were performed in an as many reps as possible style for a prescribed time domain (E.g., 10 or 20min).

## Results

The subjects who completed the entire 10 weeks (43 of them) all experienced significant improvements in both VO2max and body composition changes (decreases in body fat percentage) leading the researchers to conclude, *"Our data shows that high intensity power training (which is what they refer to CrossFit as in this study) significantly improves Vo2max and body composition in subjects of both genders across all levels of fitness."*

## My Comments (The Nitty Gritty)

First I'll begin by making some obvious statements which, may not be so obvious given that marketing and hoopla tend to cloud rational thinking:

1. CrossFit is not that novel. Circuit training and calisthenics have been around for hundreds of years. Training over a broad range of mixed time and modal domains is certainly not a new thing.
2. What CrossFit did do is create an environment and a culture that made that stuff cool and exciting for people, *"Hey, it really sucks to suffer when I work out hard but if I suffer with a group of my friends it really isn't that bad!"* In that regard, I think CrossFit has done a great job motivating a lot of people to get off their butts and exercise. This is a good thing.
3. High intensity interval training or really hard aerobic power type activities, which make up the brunt of the energy system demands during a CrossFit workout, have been shown to improve things like VO2max

and Body Composition so do these results really come as a surprise? This stuff has been looked at in hundreds of studies by now.

### **Now to the not so obvious stuff – the devil is in the details**

While the fitness and body composition results seen in this study are certainly impressive, as they are in many studies on high resistance interval training (as I alluded to in point number three above) the most concerning thing about this study and the biggest thing that concerns me with CrossFit is that of the 54 original subjects only 43 were able to complete the study. Nine of the subjects dropped out citing overuse or injury (two of the 11 dropouts cited time restriction as a problem in completing the study).

This sort of dropout rate is a bit hard for me to handle and I believe it has to do with the type of activities chosen from CrossFit workouts, the intensity with which those activities are performed, and the frequency of high intensity workouts within the training week (IE, poor sequencing of training intensities over the week). We don't see this sort of dropout rate in traditional High Intensity Interval Training studies (usually performed on a bike, treadmill, or rower) and yet we similar exercise benefits. This sort of stuff makes me question the utilization of CrossFit as a training system because the risk seems to outweigh the reward.

### **My Take Away Conclusions**

1. Hard workouts are great. Hard workouts are fun. Pushing yourself is awesome. But, you need to do so with safe exercise selection and have a training program that takes into account your abilities to adapt. This means you need to look at the training week and sequence things properly to ensure that you aren't killing yourself in the gym everyday and training yourself into a rut. A training program should make you a healthier person, not crush you and deteriorate your body.
2. Olympic lifting exercises should not be used as exercises to be performed "as many reps as possible". They are highly technical exercises and the athlete should have adequate rest before performing their set.
3. Things like deadlifts and exercises that place the spine in a compromised position as fatigue sets in should not be performed for "as many reps as possible". This is just asking for trouble.
4. Qualify people to do certain exercises. Sure, gymnastics skills are great and can be a fun addition to a workout; however, not everyone is immediately qualified to perform these activities – just like not everyone is immediately ready to squat, deadlift, or olympic lift. Make sure you have some sort of way to qualify individuals to perform these exercises. This goes beyond skill and technique and should first include ensuring that they have the requisite joint ranges of motion and stability to handle the exercises. Once they are qualified then spend time on technique. Once technique is solid then condition. Do not just throw people to the wolves.
5. Structure your training in phases so that you don't go high intensity all the time and run the risk of breaking down. The body can only tolerate so much high intensity or maximal effort work. All high intensity interval training programs should have phases where that intense stimulus is removed or minimized to allow the body to not only recover but to also work on developing the aerobic system, which can be helpful in moving the lactate threshold further to the right and allowing the individual to tolerate greater amounts of high intensity work once you get back into that phase of training.